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EXAMINER	
VIEAUX, GARY	
ART UNIT	**PAPER NUMBER**
2612	

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/002,702	HOFER ET AL.	
	Examiner	Art Unit	
	Gary C. Vieaux	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21,23 and 24* is/are allowed.

6)☐ Claim(s) *1-16, 18, 22 and 25-34* is/are rejected.

7)☒ Claim(s) *17,19,20 and 35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/1/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 26-29 are objected to because of the following informalities:

Regarding claims 26 and 27, the limitation "period of the artificial illumination" is recited in lines 1-2 of claims 26 and 27, respectively. There is insufficient antecedent basis for this limitation in the claims. These claims will be examined on their merits as best interpreted by the examiner, with "period of the artificial illumination" read to mean "period of intensity variations", as they relate to the artificial illumination.

Regarding claims 28 and 29, the limitation "periodic changes" is recited in line 1 of claim 28 and in line 2 of claim 29, respectively. There is insufficient antecedent basis for this limitation in the claims. These claims will be examined on their merits as best interpreted by the examiner, with "periodic changes" read to mean "periodic variations".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6 and 25-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US #6,130,417) in view of Munson et al. (US #6,295,085), in further view of Takahashi et al. (US#6,630,960.)

Regarding claim 1, Hashimoto teaches flicker correction which includes setting an exposure length equal to an integer multiple of a period of the AC current typically used at the scene location (col. 8 lines 59-65.) Hashimoto also teaches taking at least one exposure of the scene using the exposure length (col. 8 lines 56-58, during hill-climbing auto-focus.) Munson is found to teach determining a scene location, in order to correct the effects of flicker generated by fluorescent lighting through first establishing the frequency of the AC current typically used at that location (col. 2 lines 9-20.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine determination of a scene location to further determine the AC power frequency at that location as taught by Munson, with the flicker correction as taught by Hashimoto. One of ordinary skill in the art at the time the invention was made would be motivated to combine these teaching in order to create a method of correcting the influence of flicker in areas of the world which employ alternating current power sources that oscillate at 60 Hz, in addition to the areas of the world which employ alternating current power sources that oscillate at 50 Hz.

Moreover, Takahashi teaches exposure control, under the effects of flicker due to fluorescent lighting from a 50 Hz power source (col. 9 lines 35-38), which includes taking at least one exposure of the scene (col. 6 lines 7-21, in which at least one exposure is necessary to retrieve an image signal), and determining at least one

exposure parameter for the scene using the at least one exposure (col. 33 line 28 – col. 24 line 67, in which shutter speed, which is equated to exposure length, is determined based on the luminance levels of the image signal, and col. 35 lines 4-7, in which the variations in the luminance are monitored every field.) It would have been obvious to one of ordinary skill in the art at the time of invention to take an exposure at the set exposure length to correct the effect of flicker as taught by Hashimoto and Munson, and then determine exposure parameters from this exposure in the manner taught by Takahashi. One of ordinary skill in the art at the time of invention would have been motivated to combine these teachings as a way to maintain an exposure length that results in photography free of the influence of variations in illumination.

Regarding claim 2, Hashimoto, Munson and Takahashi teach all of the limitation of claim 1 (see the 103(a) rejection to claim 1 supra) including where the scene location is determined by user input ('085 col. 2 lines 9-20.)

Regarding claim 3, Hashimoto, Munson and Takahashi teach all of the limitation of claim 1 (see the 103(a) rejection to claim 1 supra) including where the scene location is determined by a GPS device ('085 col. 2 lines 21-25.)

Regarding claim 4, Hashimoto, Munson and Takahashi teach all of the limitation of claim 1 (see the 103(a) rejection to claim 1 supra) including where the exposure parameter comprises an exposure length ('960 fig. 28; col. 6 lines 7-21; col. 34 line 37 – col. 35 line 31.)

Regarding claim 5, Hashimoto, Munson and Takahashi teach all of the limitation of claim 1 (see the 103(a) rejection to claim 1 supra) including where the exposure

parameter comprises an aperture size ('960 fig. 28; col. 6 lines 7-21; col. 33 line 64 – col. 35 line 36.)

Regarding claim 6, Hashimoto, Munson and Takahashi teach all of the limitation of claim 1 (see the 103(a) rejection to claim 1 supra) including where the exposure parameter comprises a gain factor ('960 fig. 28; col. 6 lines 7-21; col. 34 lines 18-20; col. 35 lines 32-49.)

Regarding claim 25, Hashimoto teaches flicker correction which includes setting an exposure length equal to an integer multiple of the period of the intensity variations in the scene (col. 8 lines 59-65.) Hashimoto also teaches taking at least one exposure of the scene using the exposure length (col. 8 lines 56-58, during hill-climbing auto-focus.)

Munson is found to teach correction of the effects of flicker during photography that includes determining a presence of artificial illumination in the scene (col. 5 lines 29-43) and determining a frequency of intensity variations in the scene (col. 5 line 58 – col. 6 line 7.) Although Munson directly teaches user input related to frequency of a power source, Official Notice is taken that the frequency of artificial illumination is calculated as being twice the frequency of the power source, and that the period is calculated as the inverse of the frequency; concepts which are well known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to derive the period of the artificial illumination from the frequency of the power source at the location, for use in suppressing the effects of flicker. It would have been further obvious to one of ordinary skill in the art at

the time the invention was made to combine determination of a scene location when attempting to eliminate the effects of flicker as taught by Munson, with the flicker correction as taught by Hashimoto. One of ordinary skill in the art at the time the invention was made would be motivated to combine these teaching in order to create a method of correcting the influence of flicker in areas of the world which employ alternating current power sources that oscillate at 60 Hz, in addition to the areas of the world which employ alternating current power sources that oscillate at 50 Hz. However, neither Hashimoto nor Munson teach taking at least one exposure of the scene using the exposure length or determining at least one exposure parameter for the scene using the at least one exposure.

Nevertheless, Takahashi teaches exposure control, under the effects of flicker due to fluorescent lighting from a 50 Hz power source (col. 9 lines 35-38), which includes taking at least one exposure of the scene (col. 6 lines 7-21, in which at least one exposure is necessary to retrieve an image signal), and determining at least one exposure parameter for the scene using the at least one exposure (col. 33 line 28 – col. 24 line 67, in which shutter speed, which is equated to exposure length, is determined based on the luminance levels of the image signal, and col. 35 lines 4-7, in which the variations in the luminance are monitored every field.) It would have been obvious to one of ordinary skill in the art at the time of invention to take an exposure at the set exposure length to correct the effects of flicker as taught by Hashimoto and Munson, and then determine exposure parameters from this exposure in the manner taught by Takahashi. One of ordinary skill in the art at the time of invention would have been

motivated to combine these teachings as a way to maintain an exposure length that results in photography free of the influence of variations in illumination.

Regarding claim 26, Hashimoto, Munson and Takahashi teach all of the limitation of claim 26 (see the 103(a) rejection to claim 25 supra) including teaching where the presence and period of the artificial illumination is determined by user input ('085 col. 2 lines 9-20.)

Regarding claim 27, Hashimoto, Munson and Takahashi teach all of the limitation of claim 27 (see the 103(a) rejection to claim 25 supra) including teaching where the presence and period of the artificial illumination is determined by measuring the light from the scene for periodic variations ('085 col. 4 line 58 – col. 5 line 5, in which presence is determined via pulses detected from the measured light; '085 col. 5 lines 58-67, in which frequency is determined via pulses from the measured light.)

Regarding claim 28, Hashimoto, Munson and Takahashi teach all of the limitation of claim 28 (see the 103(a) rejection to claim 27 supra) including teaching where the periodic changes are variations in brightness ('085 col. 4 line 58 – col. 5 line 5, where the level of light is equated with brightness.)

Regarding claim 29, Hashimoto, Munson and Takahashi teach all of the limitation of claim 29 (see the 103(a) rejection to claim 27 supra) including teaching where the light from the scene is focused onto a photo sensor ('085 col. 3 lines 61-67) and the periodic changes are variations in contrast ('085 col. 5 lines 12-28, in which voltages are compared against a predetermined level in order to determine periodic changes.) The examiner notes that although Munson detects flicker by means of a light sensitive diode

and not the photo sensor array, the light from the scene is nonetheless focused onto a photo sensor, as dictated by the claim as currently written.

Regarding claim 30, Hashimoto, Munson and Takahashi teach all of the limitation of claim 30 (see the 103(a) rejection to claim 25 supra) including teaching where the period of the artificial illumination is determined by the geographic location of the scene ('085 col. 2 lines 9-37, by means of user input, GPS, or power system/wall plug at location.) Although Munson directly teaches the frequency of a power source determined by location, Official Notice is taken that the frequency of artificial illumination is calculated as being twice the frequency of the power source, and that the period is calculated as the inverse of the frequency; concepts which are well known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to derive the period of the artificial illumination from the frequency of the power source at the location, for use in suppressing the effects of flicker.

Regarding claim 31, Hashimoto, Munson and Takahashi teach all of the limitation of claim 31 (see the 103(a) rejection to claim 25 supra) including where the exposure parameter comprises an exposure length ('960 fig. 28; col. 6 lines 7-21; col. 34 line 37 – col. 35 line 31.)

Regarding claim 32, Hashimoto, Munson and Takahashi teach all of the limitation of claim 32 (see the 103(a) rejection to claim 25 supra) including where the exposure parameter comprises a gain factor ('960 fig. 28; col. 6 lines 7-21; col. 34 lines 18-20; col. 35 lines 32-49.)

Regarding claim 33, Hashimoto, Munson and Takahashi teach all of the limitation of claim 33 (see the 103(a) rejection to claim 25 supra) including where the exposure parameter comprises an aperture size ('960 fig. 28; col. 6 lines 7-21; col. 33 line 64 – col. 35 line 36.)

Regarding claim 34, Hashimoto, Munson and Takahashi teach all of the limitation of claim 34 (see the 103(a) rejection to claim 25 supra) including teaching where the method further comprises: taking a final exposure, using the exposure setting and using the exposure length.

Hashimoto is found to teach hill-climbing auto-focus in which multiple exposures are taken during the focusing operation (fig. 2A; col. 6 lines 3-36.) It would have been obvious to one of ordinary skill in the art to apply the exposure control as taught by Hashimoto, Munson and Takahashi with the exposures taken during the hill-climbing auto-focusing as taught by Hashimoto. One of ordinary skill in the art at the time of the invention would have been motivated to combine these teachings so that the final exposure, using the exposure setting, at the synchronized exposure rate, would reflect an exposure taken at a proper focus and taken with the best determined exposure setting (in this case, aperture), which would be taken free from the influence of variations in illumination.

Claims 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munson et al. (US #6,295,085), in view of Takahashi et al. (US#6,630,960.)

Regarding claim 7, Munson teaches elimination of the effects of flicker during photography that includes determining a presence of artificial illumination in the scene (col. 5 lines 29-43), determining a frequency of intensity variations in the scene (col. 5 line 58 – col. 6 line 7), and synchronizing an exposure rate with the frequency of intensity variations in the scene (col. 3 lines 33-40.) Munson, however, does not teach taking at least one exposure of the scene at the synchronized exposure rate or determining at least one exposure parameter for the scene using the at least one exposure.

Nevertheless, Takahashi teaches exposure control, under the effects of flicker due to fluorescent lighting from a 50 Hz power source (col. 9 lines 35-38), which includes taking at least one exposure of the scene (col. 6 lines 7-21, in which at least one exposure is necessary to retrieve an image signal), and determining at least one exposure parameter for the scene using the at least one exposure (col. 33 line 28 – col. 24 line 67, in which shutter speed, which is equated to exposure length, is determined based on the luminance levels of the image signal, and col. 35 lines 4-7, in which the variations in the luminance are monitored every field.) It would have been obvious to one of ordinary skill in the art at the time of invention to synchronize an exposure rate in order to eliminate the effects of flicker as taught by Munson, and then determine exposure parameters based on this exposure rate in the manner taught by Takahashi. One of ordinary skill in the art at the time of invention would have been motivated to combine these teachings as a way to maintain an exposure length that results in photography free of the influence of variations in illumination.

Regarding claim 8, Munson and Takahashi teach all of the limitation of claim 7 (see the 103(a) rejection to claim 7 supra) including where the presence and frequency of the artificial illumination is determined by user input.

Munson teaches detection of presence and frequency of the artificial illumination (col. 4 lines 41-57; col. 6 lines 5-7), in addition to information relating to artificial illumination being input by a user (col. 2 lines 9-20.) Official Notice is taken that the frequency of artificial illumination is calculated as being twice the frequency of the power source; a concept which is well known and expected in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to derive the frequency of the artificial illumination from the frequency of the power source at the location for use in suppressing the effects of flicker. In light of these teachings, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the presence and frequency of the artificial illumination from the user input of location information, as a way to reduce processing or as a way to eliminate the need for flicker detection.

Regarding claim 9, Munson and Takahashi teach all of the limitation of claim 9 (see the 103(a) rejection to claim 7 supra) including teaching where the presence and frequency of the artificial illumination is determined by measuring the light from the scene for periodic variations ('085 col. 4 line 58 – col. 5 line 5, in which presence is determined via pulses detected from the measured light; '085 col. 5 lines 58-67, in which frequency is determined via pulses from the measured light.)

Regarding claim 10, Munson and Takahashi teach all of the limitation of claim 10 (see the 103(a) rejection to claim 9 supra) including teaching where the periodic changes are variations in brightness ('085 col. 4 line 58 – col. 5 line 5, where the level of light is equated with brightness.)

Regarding claim 11, Munson and Takahashi teach all of the limitation of claim 11 (see the 103(a) rejection to claim 9 supra) including teaching where the light from the scene is focused onto a photo sensor ('085 col. 3 lines 61-67, col. 4 lines 58-61) and the periodic changes are variations in contrast ('085 col. 5 lines 12-28, in which voltages are compared against a predetermined level in order to determine periodic changes.) The examiner notes that although Munson detects flicker by means of a light sensitive diode and not the photo sensor array, the light from the scene is nonetheless focused onto a photo sensor, as dictated by the claim as currently written.

Regarding claim 12, Munson and Takahashi teach all of the limitation of claim 12 (see the 103(a) rejection to claim 7 supra) including teaching where the frequency of the artificial illumination is determined by the geographic location of the scene ('085 col. 2 lines 9-37.)

Munson teaches detection of the frequency of the artificial illumination (col. 4 lines 41-57; col. 6 lines 5-7), in addition to information relating to artificial illumination determined of a geographic location (col. 2 lines 9-37.) Official Notice is taken that the frequency of artificial illumination is calculated as being twice the frequency of the power source; a concept which is well known and expected in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to derive

the frequency of the artificial illumination from the frequency of the power source at the location, for use in suppressing the effects of flicker. In light of these teachings, it would have been further obvious to one of ordinary skill in the art at the time the invention was made to determine the frequency of the artificial illumination directly from the associated power source at that geographic location, as a way to reduce processing or as a way to eliminate the need for flicker frequency detection.

Regarding claim 13, Munson and Takahashi teach all of the limitation of claim 13 (see the 103(a) rejection to claim 7 supra) including teaching where the exposure parameter comprises an exposure length ('960 fig. 28; col. 6 lines 7-21; col. 34 line 37 – col. 35 line 31.)

Regarding claim 14, Munson and Takahashi teach all of the limitation of claim 14 (see the 103(a) rejection to claim 7 supra) including teaching where the exposure parameter comprises a gain factor ('960 fig. 28; col. 6 lines 7-21; col. 34 lines 18-20; col. 35 lines 32-49.)

Regarding claim 15, Munson and Takahashi teach all of the limitation of claim 15 (see the 103(a) rejection to claim 7 supra) including teaching where the exposure parameter comprises an aperture size ('960 fig. 28; col. 6 lines 7-21; col. 33 line 64 – col. 35 line 36.)

Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Munson et al. (US #6,295,085) in view of Takahashi et al. (US#6,630,960), in further view of Hashimoto (US #6,130,417.)

Regarding claim 16, Munson and Takahashi teach all of the limitation of claim 16 (see the 103(a) rejection to claim 7 supra) except for teaching where the method further comprises: taking a final exposure, using the exposure setting, at the synchronized exposure rate.

Nevertheless, Hashimoto teaches hill-climbing auto-focus in which multiple exposures are taken during the focusing operation (fig. 2A; col. 6 lines 3-36.) It would have been obvious to one of ordinary skill in the art to combine the exposure control as taught by Munson and Takahashi with the exposures taken during the hill-climbing auto-focusing as taught by Hashimoto. One of ordinary skill in the art at the time of the invention would have been motivated to combine these teachings so that the final exposure, using the exposure setting, at the synchronized exposure rate, reflected an exposure taken at a proper focus and taken with the best determined exposure setting (in this case, aperture), which was taken free from the influence of variations in illumination.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki (US #5,701,526) in view of Inuiya et al. (US #5,905,529), further in view of Smith et al. (US #6,501,518), further in view of Takahashi et al. (US#6,630,960.)

Regarding claim 18, in the Background of the Invention, Iwasaki teaches a method of overcoming the effects of artificial illumination in a scene comprising predicting at least one frequency for a variation in the illumination in the scene (fig. 13A; col. 1 lines 44-46, where prediction of the frequency of illumination would be required in

order to conduct photometry at one-half of the flicker cycle), measuring light from the scene at a periodic rate, where the periodic rate is different than any of the predicted frequencies, using an exposure length that is different than any of the periods of the predicted frequencies (fig. 13A; col. 1 lines 56-61), as well as disclosing the need for calculation of the influence of flicker cycle (col. 1 lines 56-58.)

Inuiya teaches detecting the presence of an artificial illuminant when the measured light from the scene contains periodic changes (col. 12 lines 27-37.) It would have been obvious to one of ordinary skill in the art at the time of the invention to include the detection of an artificial illuminant as taught by Inuiya, with the method as taught by Iwasaki. One of ordinary skill in the art at the time the invention was made would be motivated to make this combination in order to correct effects of flicker, when determined to be present.

Further, Smith teaches use of a Fast Fourier Transform (FFT) analysis of the sampled light to determine the phase and frequency of the periodic changes (in relation to phase: col. 3 lines 30-40, col. 4 lines 23-31; in relation to frequency: col. 4 lines 64-67), as well as teaching synchronizing an exposure rate with the frequency of the intensity variations in the scene (col. 3 lines 37-40.) Given the teachings of Smith in relation to the method as taught by Iwasaki and Inuiya, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a FFT to determine the frequency of oscillation of the periodic changes in the measured light, as well as the phase of the changes in relation to the illumination flicker, so that the influence of flicker due to fluorescent lighting could be corrected by synchronizing an exposure rate with

the frequency of the intensity variations, based on the detected phase and frequency of the flicker.

However, Neither Iwasaki, Inuiya or Smith teach taking at least one exposure of the scene at the synchronized exposure rate, the at least one exposure having an exposure length and determining at least one exposure parameter for the scene using the at least one exposure.

Nevertheless, Takahashi teaches exposure control, under the effects of flicker due to fluorescent lighting from a 50 Hz power source (col. 9 lines 35-38), which includes taking at least one exposure of the scene (col. 6 lines 7-21, in which at least one exposure is necessary to retrieve an image signal), and determining at least one exposure parameter for the scene using the at least one exposure (col. 33 lines 65-67, in which aperture is determined based on the luminance levels of the image signal, and col. 35 lines 4-7, in which the variations in the luminance are monitored every field.) It would have been obvious to one of ordinary skill in the art at the time of invention to synchronize an exposure rate with the frequency of the intensity variations in the scene in order to correct the effects of flicker as taught by Iwasaki, Inuiya and Smith, and then determine exposure parameters based on this exposure rate in the manner taught by Takahashi. One of ordinary skill in the art at the time of invention would have been motivated to combine these teachings as a way to determine an aperture value free of the influence of variations in illumination.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki (US #5,701,526) in view of Ohkawara et al. (US #6,683,652), in further view of Takahashi et al. (US#6,630,960.)

Regarding claim 22, Iwasaki teaches an apparatus adapted to cancel the effects of flicker that includes a means for measuring light from the scene at a periodic rate using a predetermined exposure time (figs. 2 and 3 indicator 9; col. 5 lines 48-55; figs. 7B-7F.)

Ohkawara is further found to provide the teaching of an apparatus, utilized for auto-focusing of a camera, that provides means for determining the presence (col. 15 lines 22-27) and frequency of intensity variations from an artificial illuminant (col. 21 lines 28-29, where determination of frequency is necessary for synchronization) by examining the measured light from the scene for periodic intensity variations (col. 15 lines 58-67.) It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Iwasaki with the teachings of Ohkawara, in order to create an apparatus that can be employed in conjunction with a camera for the correction of flicker due to artificial illumination during auto-focus operations.

Furthermore, Takahashi teaches exposure control, under the effects of flicker due to fluorescent lighting from a 50 Hz power source (col. 9 lines 35-38), which includes taking at least one exposure of the scene (col. 6 lines 7-21, in which at least one exposure is necessary to retrieve an image signal), and determining at least one exposure parameter for the scene using the at least one exposure (col. 33 line 28 – col. 24 line 67, in which shutter speed, which is equated to exposure length, is determined

based on the luminance levels of the image signal, and col. 35 lines 4-7, in which the variations in the luminance are monitored every field.) It would have been obvious to one of ordinary skill in the art at the time of invention to synchronize an exposure rate in order to eliminate the effects of flicker as taught by Iwasaki and Ohkawara, and then determine exposure parameters based on this exposure rate in the manner taught by Takahashi. One of ordinary skill in the art at the time of invention would have been motivated to combine these teachings as a way to produce images with better focus and proper exposure results, free of the influence of variations in illumination.

Allowable Subject Matter

Claims 21, 23 and 24 are allowed.

Regarding claim 21, the prior art is not found to teach or fairly suggest, in combination with the existing elements of the present claim, measuring light from the scene at a periodic rate using a first exposure length that is equal to the period of the predicted frequency, re-measuring light from the scene at a periodic rate using a second exposure length that is equal to the period of a second predicted frequency, and determining the presence and frequency of the variation in the illumination in the scene when the variability of the measurements using the first exposure length is different than the variability of the measurements using the second exposure length.

Regarding claim 23, the prior art is not found to teach or fairly suggest, in combination with the existing elements of the present claim, a processor configured to not only determine the frequency of intensity variations in the illumination of the scene

by examining the measured light from the scene for periodic contrast variations, but also configured to synchronize at least one exposure, used in an auto-exposure control, to the intensity variations in the scene.

Regarding claim 24, the instant claim is allowed based on its dependence on allowable subject matter.

Claims 17, 19, 20 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 17, 19, 20 and 35, the prior art is not found to teach or fairly suggest, in combination with the claims from which dependence is derived, where an exposure is centered at a crossover point in the intensity variations.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chung et al. (US #6,271,884) discloses similar image flicker reduction with fluorescent lighting.

Takayama et al. (US #5,473,375) discloses a camera that employs a pre-exposure that is then used to correct exposure parameters for the final exposure.

Saito et al. (US#5,319,449) discloses various exposure rates in relation to flicker frequencies.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary C. Vieaux whose telephone number is 703-305-9573. The examiner can normally be reached on Monday - Friday, 8:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gary C. Vieaux
Examiner
Art Unit 2612

Gcv2

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TECHNOLOGY CENTER 2600